WHAT IS CLAIMED IS:

1. A field emission type cold cathode device comprising:

a substrate; and

a metal plating layer formed on said substrate;

wherein said metal plating layer contains at least one carbon structure selected from a group of fullerenes and carbon nanotubes, said carbon structure is stuck out from said metal plating layer and a part of said carbon structure is buried in said metal plating layer.

2. A field emission type cold cathode device according to claim 1, further comprising:

a conductive layer formed between said substrate and said metal plating layer.

3. The field emission type cold cathode device according to claim 1, wherein said metal plating layer is selected from a group of nickel, chromium and copper.

4. The field emission type cold cathode device according to claim 1, wherein said metal plating layer is formed by either electroplating processing or electroless plating processing.

5. The field emission type cold cathode device according to claim 1, wherein said carbon nanotubes having a conductive material inside.

6. The field emission type cold cathode device

according to claim 5, wherein said conductive material is a content of a plating liquid.

7. The field emission type cold cathode device according to claim 5, wherein said conductive material is selected from a group of Mo, Ta, W, Ni, Cr, Fe, Co, Cu, Si, LaB_6, AlN, GaN, carbon, graphite and diamond.

8. The field emission type cold cathode device according to claim 1, wherein said metal plating layer contains an additive material which increases resistance of said metal plating layer.

9. The field emission type cold cathode device according to claim 8, wherein said additive material is selected from a group of boron, phosphorus and polytetrafluoroethylene.

10. A vacuum micro device comprising:

a substrate;

a metal plating layer formed on said substrate, said metal plating layer containing at least one carbon structure selected from a group of fullerenes and carbon nanotubes, and said carbon structure being stuck out from said metal plating layer and a part of said carbon structure being buried in said metal plating layer; and

an electrode disposed separately from said substrate, said electrode applied a higher electrical potential than an electrical potential applied to said metal plating layer.

11. A vacuum micro device according to claim 10, further comprising:

a conductive layer formed between said substrate and said metal plating layer.

12. A vacuum micro device comprising:

a first substrate;

a conductive layer formed on said first substrate;

a metal plating layer formed on said conductive layer, said metal plating layer containing at least one carbon structure selected from a group of fullerenes and carbon nanotubes, and said carbon structure being stuck out from said metal plating layer and a part of said carbon structure being buried in said metal plating layer;

a second substrate opposed to said first substrate;

an electrode formed on said second substrate, said electrode applied a higher electrical potential than an electrical potential applied to said metal plating layer; and

a luminescent material formed on said electrode

13. A vacuum micro device according to claim 12, further comprising:

an insulation layer formed on said substrate; and

a gate electrode formed on said insulation layer and between said metal plating layer and said electrode.

14. A manufacturing method of field emission type cold cathode device comprising:

immersing a substrate in a plating liquid containing at least one carbon structure selected from a group of fullerenes and carbon nanotubes; and

forming a metal plating layer on said conductive layer, wherein said carbon structure is stuck out from said metal plating layer and a part of said carbon structure is buried in said metal plating layer.

15. A manufacturing method of field emission type cold cathode device according to claim 14, further comprising:

forming a conductive layer on a substrate before immersing said substrate.

16. The manufacturing method according to claim 14, wherein said metal plating layer is formed by either electroplating processing or electroless plating processing.

17. A manufacturing method of field emission type cold cathode device comprising:

forming a conductive layer on a first substrate having concaves;

immersing said first substrate in a plating liquid containing at least one carbon structure selected from a group of fullerenes and carbon nanotubes;

forming a metal plating layer on said conductive layer, said carbon structure being stuck out from said metal plating layer and a part of said carbon structure being buried in said metal plating layer;

pressing a second substrate to said first substrate sandwiching said metal plating layer; and

removing said first substrate from said second substrate leaving said metal plating layer on said second substrate.

18. The manufacturing method according to claim 17, wherein said metal plating layer is formed by either electroplating processing or electroless plating processing.